

Appln No. 09/846,738

Amdt date July 24, 2003

Reply to Office action of April 24, 2003

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A steerable catheter comprising:  
an elongated, flexible tubular catheter body having proximal and distal ends and a lumen extending therethrough;

a tip section at the distal end of the catheter body, the tip section comprising a flexible plastic tubing having at least one off-axis lumen extending therethrough;

a control handle at the proximal end of the catheter body;

a puller wire extending through the off-axis lumen of the tip section and lumen of the catheter body, and having a proximal end anchored to the control handle and a distal end anchored to the tip section, whereby the puller wire is longitudinally moveable relative to the catheter body to cause deflection of the tip section in a plane in a first direction; and

one or more stabilizing features extending longitudinally along at least a portion of the length of the tip section and positioned generally symmetrically about a diameter of the tip section corresponding to the plane in which the tip section is deflectable, the one or more stabilizing features comprising a material that has a higher modulus of elasticity than the plastic of the tip section wherein the tip section tubing comprises a core and an outer layer surrounding the core.

2. (Original) A catheter according to claim 1, wherein the tip section is more flexible than the catheter body.

Appln No. 09/846,738

Amdt date July 24, 2003

Reply to Office action of April 24, 2003

3. (Original) A catheter according to claim 1, wherein the one or more stabilizing features are generally rigidly in place relative to the tip section.

4. (Canceled)

5. (Currently Amended) A catheter according to claim [4] 1, wherein two stabilizing features are provided in the outer layer on opposite sides of the core.

6. (Original) A catheter according to claim 5, wherein each stabilizing feature comprises a metal rod.

7. (Original) A catheter according to claim 6, wherein the metal rods are coextruded with the outer layer.

a1 8. (Original) A catheter according to claim 5, wherein each stabilizing feature comprises a plastic strip.

9. (Original) A catheter according to claim 8, wherein the plastic strips are coextruded with the outer layer.

10. (Original) A catheter according to claim 5, wherein the tip section further comprises a braided mesh between the outer layer and the core.

11. (Original) A catheter according to claim 10, wherein the tip section further comprises an inner layer between the braided mesh and the core.

Appln No. 09/846,738

Amdt date July 24, 2003

Reply to Office action of April 24, 2003

12. (Currently Amended) A catheter according to claim [6] 1, wherein the tip section further comprises a braided mesh between the outer layer and the core.

13. (Currently Amended) A catheter according to claim [4] 1, wherein a single stabilizing feature is provided in the core.

14. (Currently Amended) A catheter according to claim [4] 1, wherein two stabilizing features are provided in the core.

a 15. (Original) A catheter according to claim 1, having a second off-axis lumen in the tip section and further comprising a second puller wire extending through the second off-axis lumen, the second puller wire having a proximal end anchored to the control handle and a distal end anchored to the tip section, whereby the puller wire is longitudinally moveable relative to the catheter body to cause deflection of the tip section in the plane in a second direction opposite the first direction.

16. (Original) A catheter according to claim 15, wherein the tip section is more flexible than the catheter body.

17. (Original) A catheter according to claim 15, wherein the one or more stabilizing features are generally rigidly in place relative to the tip section.

18. (Canceled)

19. (Currently Amended) A catheter according to claim [18] 15, wherein two stabilizing features are provided in the outer layer on opposite sides of the core.

Appln No. 09/846,738

Amdt date July 24, 2003

Reply to Office action of April 24, 2003

20. (Original) A catheter according to claim 19, wherein each stabilizing feature comprises a metal rod.

21. (Original) A catheter according to claim 20, wherein the metal rods are coextruded with the outer layer.

22. (Original) A catheter according to claim 19, wherein each stabilizing feature comprises a plastic strip.

23. (Original) A catheter according to claim 22, wherein the plastic strips are coextruded with the outer layer.

24. (Original) A catheter according to claim 19, wherein the tip section further comprises a braided mesh between the outer layer and the core.

25. (Original) A catheter according to claim 24, wherein the tip section further comprises an inner layer between the braided mesh and the core.

26. (Currently Amended) A catheter according to claim [20] 15, wherein the tip section further comprises a braided mesh between the outer layer and the core.

27. (New) A catheter according to claim 1, wherein the one or more stabilizing features each have a generally round cross-sectional area.

28. (New) A catheter according to claim 1, wherein the one or more stabilizing features each have a generally pie-shaped cross-sectional area.

Appln No. 09/846,738

Amdt date July 24, 2003

Reply to Office action of April 24, 2003

29. (New) A catheter according to claim 1, wherein the core comprises a first material and the outer layer comprises a second material that is different from the first material.

30. (New) A catheter according to claim 1, wherein the core comprises a substantially solid material.

31. (New) A steerable catheter comprising:  
an elongated, flexible tubular catheter body having proximal and distal ends and a lumen extending therethrough;  
a tip section at the distal end of the catheter body, the tip section comprising a flexible plastic tubing having at least one off-axis lumen extending therethrough;  
a control handle at the proximal end of the catheter body;  
a puller wire extending through the off-axis lumen of the tip section and lumen of the catheter body, and having a proximal end anchored to the control handle and a distal end anchored to the tip section, whereby the puller wire is longitudinally moveable relative to the catheter body to cause deflection of the tip section in a plane in a first direction;  
and

one or more stabilizing features extending longitudinally along at least a portion of the length of the tip section and positioned generally symmetrically about a diameter of the tip section corresponding to the plane in which the tip section is deflectable, the one or more stabilizing features comprising a material that has a higher modulus of elasticity than the plastic of the tip section, wherein the one or more stabilizing features extend through the longitudinal axis of the tip section.